DDI-1100-161-78

DEFENSE INTELLIGENCE AGENCY

DEFENSE INTELLIGENCE REPORT

SOVIET/WARSAW PACT GROUND FORCE CAMOUFLAGE AND CONCEALMENT TECHNIQUES

JANUARY 1978

SOVIET/WARSAW PACT GROUND FORCE CAMOUFLAGE AND CONCEALMENT TECHNIQUES

DDI-1100-161-78

Information Cutoff Date: February 1977

This is a Department of Defense Intelligence Document
prepared by the Soviet/Warsaw Pact Division,
Directorate for Intelligence Research,
Defense Intelligence Agency

Author: Jack Mace, Ground Forces Branch,
Tactics and Organization Section

Approved For Release 2005/03/24 : CIA-RDP83M00171R000300230001-9

PREFACE

This Defense Intelligence Report has been prepared in response to a request by the Commanding General, Second Marine Division for a study addressing Soviet/Warsaw Pact camouflage and concealment techniques likely to be encountered by U.S. scouts, snipers, artillery observers, and forward air controllers.

A special effort has been made to produce an unclassified study to encourage its wide dissemination and use. Data were drawn primarily from Soviet military literature. Major reference documents include the following:

Camouflage and Concealment of Ground Force Units, (Moscow, 1976), Col A. A. Beketov, Col A. P. Belokon, and Col S. G. Chermashentsev

Operational Troop Camouflage, (Moscow, 1975), General-Major V. A. Matsulenko

Camouflage in Modern Combat, (Moscow, 1975), M. I. Tolochkov

Engineering Measures for Defense Against Modern Weapons, (Moscow, 1974), Yu. P. Dorofeyev and V. K. Shamshurov

Engineer Support of a Motor Rifle (Tank) Battalion on the March and in the Encounter Battle, (Moscow, 1975), Col A. P. Belokon and V. I. Kalayda

This publication should be used in conjunction with the following DIA publications:

The Soviet Motorized Rifle Company, DDI-1100-77-76, October 1976, (U)

Soviet Tank Company Tactics, DDI-1120-129-76, May 1976, (U)

Soviet Tank Battalion Tactics, DDI-1120-10-77, August 1977, (U)

Soviet Tactical Intelligence and Reconnaissance, DDI-1100-148-77, February 1977, (C)

The illustrations in this study were drawn by Mr. Thomas F. McKinley of the Graphics Section, Publications Branch (RDS-2B1).

Addressees are requested to forward information which will supplement or correct this report. Questions and comments should be referred in writing to the Defense Intelligence Agency (ATTN: DB-1B4), Washington, D.C. 20301.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

SUMMARY

The Soviet army has probably employed large-scale battlefield deception more frequently and with more consistent success than any other army. The Soviets classify deception as an art and have developed a doctrine called maskirovka which embraces a multitude of measures designed to support deception in military operations. These measures include camouflage to disguise, conceal or distort; exploitation of terrain; use of darkness and weather to mask operations; use of dummy/decoy equipment; light and sound masking; demonstration or diversionary actions; interfering with the enemy's technical means of collection; communications security and electronic emission control; dispersion and frequent movement of units, equipment, and command posts; and "disinformation."

The Soviets believe that deception promotes surprise, minimizes losses, and improves prospects for success in combat. For these reasons, deception is an integral part of virtually every Soviet military operational plan.

Camouflage and concealment essentially consist of measures employed to reduce, conceal, alter, distort or obliterate the characteristic outlines and revealing features of military personnel, equipment, and installations. The methods the Warsaw Pact employs to camouflage and conceal its ground forces are essentially the same methods used by Western armies. Among Warsaw Pact forces, however, there seems to be more doctrinal emphasis on camouflage, concealment, and deception in general.

Although Soviet/Warsaw Pact doctrinal emphasis on camouflage and concealment is substantial, commanders are not equally enthusiastic or resourceful in applying doctrinal concepts; consequently, considerable variation may be noted in the proficiency and innovativeness displayed by individual units. Motivation -- or lack thereof -- appears to be the key to how seriously commanders attempt to implement doctrinal guidelines.

Senior Soviet officers have recently expressed concern about commanders who pay inadequate attention to camouflage and concealment during field training exercises. Despite noted deficiencies in the effective peacetime application of doctrinal guidelines, the Warsaw Pact must be credited with the capability of effectively implementing camouflage and concealment measures during combat operations.

Approved For Release 2005/03/24 : CIA-RDP83M00171R000300230001-9

Approved For Release 2005/03/24 : CIA-RDP83M00171R000300230001-9

SOVIET/WARSAW PACT GROUND FORCE CAMOUFLAGE AND CONCEALMENT TECHNIQUES

1. INTRODUCTION

The Soviet proclivity for secrecy, concealment, and deception -- particularly in regard to military matters -- is well known. The Soviet Union, more than any other major power, has demonstrated an appreciation of the advantages which may be gained by practicing deception to promote its policies, aims, and values in peacetime as well as wartime. In regard to the latter, the Soviet army has probably employed large-scale battlefield deception more frequently and with more consistent success than any other army. The Soviets classify deception as an *art* which requires imagination and resourcefulness. To be successful, they believe deception cannot follow established patterns: it must be tailored for each situation and circumstance, varying in time, place, and nature.

As described in Soviet military literature, the purpose of deception is to mislead and limit the enemy's ability to observe, recognize, and identify the location, movement, size, equipment, and composition of Soviet forces and/or their objectives and intentions. The practice of deception thereby promotes surprise, minimizes personnel and equipment losses, and improves prospects for success in combat. For these reasons, deception is an integral part of virtually *every* Soviet military operational plan.

2. DOCTRINE

The basis for longstanding and continuing Soviet camouflage, concealment and deception practices can be found in the doctrinal concept of *maskirovka.* The term is usually translated as "camouflage" or "concealment," but the Soviet definition is much broader, encompassing a multitude of activities designed to support deception in military operations. Those activities embraced by the concept of *maskirovka* include: camouflage to disguise, conceal, or distort; exploitation of terrain to take advantage of its concealing features; use of darkness and adverse weather conditions to mask operations; use of dummy/decoy equipment; light and sound masking; demonstration or diversionary actions; interfering with the enemy's technical means of collection; communications security and electronic emission control; dispersion and frequent movement of troops, units, equipment, and command posts; and "disinformation" *(dezinformatsiya),* i.e., misinformation: the manipulation of true, distorted, or false information to mislead the enemy.

Maskirovka has tactical, operational, and strategic applications. The Soviets distinguish between these applications by the *scope* of military operations involved, rather than the specific methods employed or the type of force elements which employ them.[1] Most doctrinal discussions of *maskirovka* in Soviet military literature are framed in a tactical or operational context, i.e., the wartime operations of maneuver units, armies, and *fronts.* It is clear, however, that *maskirovka* is employed in peacetime as well as wartime and that strategic applications may include large-scale or national measures.

---

1 In Soviet terminology, "tactical" refers to operations involving units up to division-size, while "operational" refers to army and *front* operations.

3. PRINCIPLES OF CAMOUFLAGE AND CONCEALMENT

Camouflage and concealment are the most frequently employed of the many deceptive measures practiced by the Warsaw Pact. The principles of camouflage and concealment are based on a knowledge of exposure signs and indicators which are commonly associated with military activity and equipment. These signs and indicators include movement and traces of movement, shape, size, position, color, noise, fire, smoke, dust, light, and shadow. Camouflage and concealment essentially consist of the measures employed to conceal, reduce, alter, distort, or obliterate the characteristic outlines and revealing features of military personnel, equipment, and installations.

The methods of camouflaging and concealing are fairly standard throughout the armies of the world; in most respects, the techniques practiced by Warsaw Pact ground forces differ little from those practiced by Western armies. Among Pact forces, however, there seems to be more doctrinal emphasis on camouflage, concealment, and deception in general.

The Soviets are aware that potential adversaries possess sophisticated reconnaissance means which "complicate" the demands placed on commanders to devise and implement effective camouflage and concealment measures. They believe, however, that the effectiveness of hostile reconnaissance can be limited by resourceful commanders who innovatively apply doctrinal guidelines requiring *variety, timeliness, continuity,* and *convincingness.* In addition, it should be emphasized that camouflage and concealment will be practiced in conjunction with a wide range of other deceptive measures which, as a whole, are designed to mislead the enemy.

4. TERRAIN, WEATHER AND DARKNESS

a. *General*

Terrain features, adverse weather conditions, and darkness offer excellent camouflaging and concealing properties which will be systematically exploited by Warsaw Pact ground forces. These camouflaging and concealing properties are considered all the more desirable because they can be exploited with minimum time and resource expenditure.

b. *Terrain*

The most ideal terrain for concealment is broken and closed, with plentiful vegetation and/or manmade structures. Such terrain offers a multitude of natural and artificial screens which protect against visual, radar, and heat reconnaissance. The least desirable terrain is open, level, single tone, and devoid of vegetation and/or manmade structures. Operations in this type terrain may require artificial "spotting" of the surface of the ground. This may be accomplished by several means: removing portions of the surface layer of earth and scattering dirt, peat, cinders, sawdust, or foliage; loosening or removing snow; trampling, burning, or removing grass; plowing; changing the color of vegetation by soaking it with chemicals; applying fertilizer; staining or painting the ground; and burning flammable material. Such artificially created "spots" are used to conceal vehicles, equipment, and positions.

Forests represent the best natural screens, particularly when trees have dense intertwined crowns, and undergrowth is present. Evergreen forests (pine, fir) offer the most protection, since they retain their leaves throughout the year. Maximum use will

also be made of groves, orchards, brush, shrubbery, tall grass, gardens, parks, ditches, ravines, caves, tunnels, snowdrifts, the reverse slopes of hills, embankments of roads and railroads, haystacks, shadows, debris, fences, buildings, and other manmade structures.

Individual soldiers and crew members are expected to make use of improvised natural vegetation, e.g., freshly cut branches, leaves, grass, reeds, moss, algae, and other readily available material such as dirt, snow, and turf (Figure 1). Simple screens consisting of branches, straw, cornstalks, reeds, and brushwood are commonly constructed by troops to conceal personnel, equipment, and positions. These screens can be very effective if shaped to conform with local objects and matched with the color and pattern of surrounding terrain.

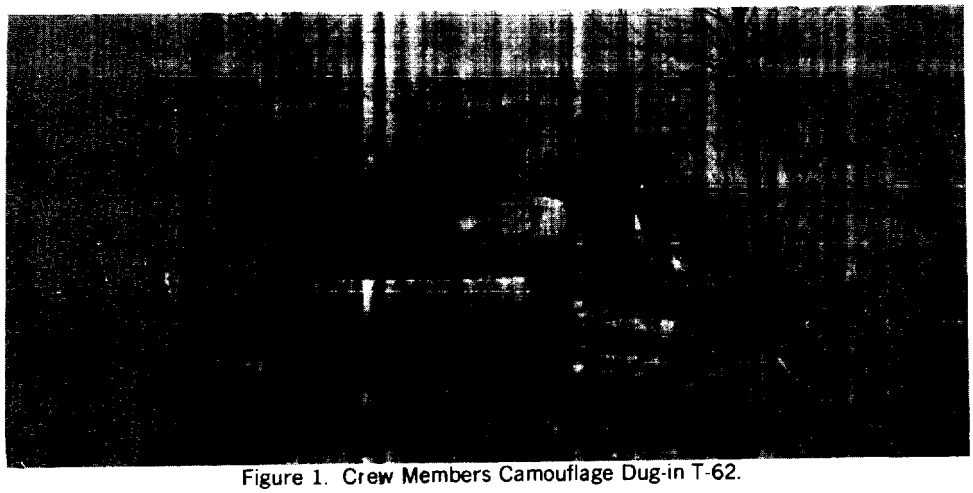

Figure 1. Crew Members Camouflage Dug-in T-62.

An appreciation of the importance the Soviets attach to the proper use of terrain can be gained by the manner in which they examine a battlefield (or potential battlefield) for signs of enemy presence. Rather than initially examine the area as a whole, it is divided into a near zone, middle zone, and a far zone. Observers are required to examine each zone meticuously, slowly moving from one natural object or structure to another, noting outlines, colors, and numbers. Observations are conducted in a strict sequence, with particular attention directed at determining the most probable locations of enemy command/observation posts, direct fire weapons, mortars, artillery, observers, and snipers. Once initial observations have been made, the slightest change must be reported to a unit's commander while further observation continues.

c. *Engineer Work*

The Soviets believe the concealment of units operating in suitable terrain can generally be accomplished with relative ease when major field construction of trenches, shelters, and fortifications is not required. Under such circumstances, equipment and minor construction such as the digging of foxholes and a few slit trenches can almost always be concealed under the crowns of trees, by other natural screens, or nets. The likelihood of detection, however, increases substantially when extensive construction work is performed. Consequently, efforts will be made to limit construction to that which is considered essential.

Engineer work will be characterized by efforts to minimize the necessity for camouflage without impairing its quality. This will be accomplished primarily by selecting sites which take advantage of the natural camouflaging and concealing properties of terrain and by avoiding unnecessary disruption of the natural appearance of terrain -- especially the removal of vegetation.

Camouflage measures are required to be implemented before engineer work commences and continue through the construction and occupation of positions. Foxholes, personnel/communication trenches, vehicle revetments, and other excavations and fortifications are camouflaged with nets, by using locally available improvised material, and by locating them along curvatures and uneven areas of terrain, e.g., roads, ditches, and enclosures. Horizontal camouflage nets or screens are used to conceal excavations, fortifications, and portions of trenches from aerial observation, while vertical screens are used to protect against ground observation. Although both nets and improvised material may be used, primary reliance is often placed on the latter, since the demand for issued camouflage sets may exceed the supply. (See #7, ARTIFICIAL CAMOUFLAGE SETS AND FIELD EXPEDIENTS.)

Turf may be used for concealing parapets, but its use will be selective. Sodding is time-consuming, labor intensive, and many positions may not be occupied long enough to make the effort worthwhile. Depending on terrain variations, cut vegetation, sand, dirt, or snow may be considered sufficient for concealing parapets.

d. *Weather and Darkness*

Adverse weather conditions and darkness are considered valuable allies which can facilitate the accomplishment of combat tasks. Soviet operations during World War II are replete with examples of successful attacks being executed during periods of rain, snow, fog, low cloud cover, and darkness. In regard to the latter, it is estimated that about 25 percent of Soviet field training takes place during hours of darkness (Figure 2).[2]

Figure 2. T-62s in Night Firing Exercise.

2 The estimate that approximately 25 percent of field training takes place at night reflects a refinement of an earlier estimate of 30-40 percent which appeared in a DIA study published in March 1976. See the forthcoming DIA study scheduled for publication in the fourth quarter of 1977: *Evaluation of Soviet Night Combat Capabilities,* DDI-1100-173-77, (C).

Whenever possible, the preparation, camouflaging, and occupation of field positions will occur at night or under other conditions of limited visibility. Attacking forces will move to assembly areas and lines of departure during darkness and deploy for attack at dawn. The Soviets believe that darkness and adverse weather conditions particularly favor long marches, withdrawals, regroupings and concentrations, engineer construction, and the achievement of surprise. They are aware, however, of the capability of hostile radar, infrared, night vision, and illumination devices to detect movement and activity under such circumstances. They will, therefore, avoid relying entirely on the concealing properties of weather and darkness, but will simultaneously employ a wide variety of other camouflage and concealment measures. (Soviet night operations are discussed in detail in the unclassified DIA study *Soviet Ground Forces, Night Operations,* DDI-1100-128-76, March 1976.)

5. LIGHT AND SOUND MASKING

a. *Light Masking*

Smoking, the use of matches, lighters, campfires, and electric lights are prohibited except in specifically designated areas where such activity can be concealed by light-impenetrable material. Blackout measures are required to conceal interior lights, e.g., windows, hatches, and entrances through which light may escape must be covered with curtains, shutters, or other light-proof barriers.

Troops are warned that at night their campfires can be seen (at ground level) at a distance of 6-8 kilometers; the glow from a lit cigarette, 500 meters away; and the light given off by matches or lighters, up to 1.5 kilometers. The light from a flashlight is visible at a distance of 1.5-2 kilometers; the muzzle flash from small arms, 1.2-2 kilometers away; and vehicle headlights may be seen at a distance of 4-8 kilometers or more.

Many vehicles are equipped with blackout devices which subdue headlight beams during night movement (Figure 3). These devices can be employed in three modes: undimmed, partially dimmed, and fully dimmed. In the undimmed mode, headlight beams are not diminished (i.e., the headlights work like those on vehicles which do not have blackout devices). This mode is used when operating in the deep rear of friendly territory where there is little danger of enemy reconnaissance and/or interdiction. The partially dimmed mode may be used during movement a considerable distance from the enemy. The fully dimmed mode, which sharply reduces the light intensity of headlights, is used when operating near the enemy.

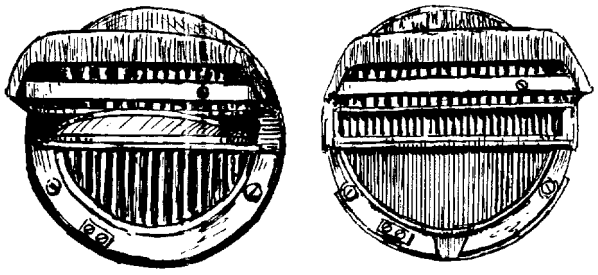

Figure 3. Headlight Blackout Device.

Blackout devices for vehicle signal and dome lights consist of metal inserts with holes. The inserts are mounted inside the light fixture between the bulb and the lens. The tail lights of wheeled vehicles are concealed with a special rim with a cover and blackout insert. The insert is designed to help drivers determine the approximate distance to a preceding vehicle. In addition, two types of light fixtures -- under body lights and light screens -- may be attached to vehicles to increase the ability of drivers to follow preceding vehicles at a safe distance, particularly when headlights are fully dimmed or turned off. Under body lights are mounted beneath the front of wheeled vehicles, while light screens may be mounted on the left rear of tracked vehicles. The light screens consist of a screen of white sheet metal (150 x 150 mm) illuminated from above by a small electric bulb, which is shielded from aerial observation. The light given off by under body lights and light screens can be seen at a distance of approximately thirty meters.

Another method which may be employed to reduce the visibility of light (especially from the air) involves the creation of so-called "local illumination." This may be accomplished by fitting light sources with cylindrical or cone-shaped inserts made of sheet metal or cardboard to direct the light flux downward. In addition, electric light bulbs may be painted, leaving only a small opening at the bottom of the bulb for light to pass through. Specifically designed individual lighting devices may also be employed. One such device has been designed with a hinge connection that makes the light given off by a flashlight bulb flow downward regardless of the position of the individual's head (Figure 4).

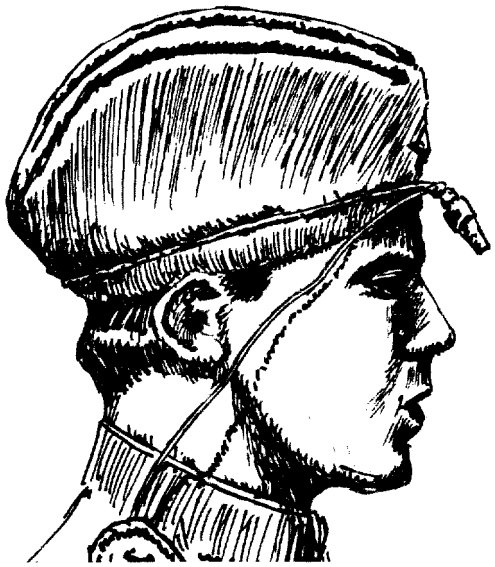

Figure 4. Individual Lighting Device.

Finally, light may be employed to deceive the enemy, e.g., the intentional display of light from open windows, dugouts, vehicle headlights, and campfires. False window openings, for example, can be constructed in the form of covered boxes with lamps inside, and vehicle lights on roads can be simulated by portable electric generators, or with lights mounted in pairs on wooden poles spaced 30-50 meters apart.

b. *Sound Masking*

In open, level terrain audibility is considerably better than on broken terrain. Warsaw Pact troops are cautioned that sounds will carry more easily to the enemy when the wind is blowing towards him, in clear and windless weather, in early morning, and especially at night. Furthermore, the degree of propagation of sounds in the water or on its surface is exceptionally high. During rain, snow, thunderstorms, and gusting winds, however, it is considerably more difficult for the enemy to distinguish sounds which characterize military activity.

Troops are informed of the distances at which certain sounds are perceptible. At night in open areas, for example, the sound of troops walking on a road can be distinguished at 300-600 meters; the movement of trucks, 1.5-2 kilometers; tanks, 2-4 kilometers; a single shot from a rifle, 2-3 kilometers; automatic weapons fire, 3-4 kilometers; a shovel striking the ground, 500-1000 meters; the conversation of a few men, up to 300 meters; and the impact of oars on water, 1-2 kilometers.

Regulations require that commands be passed in a whisper and that superfluous conversations be eliminated. Radio and telephone discussions must be in subdued tones. Mess kits, entrenching tools and other gear are required to be carefully secured.

Sounds made by armored vehicles may be reduced by using unpaved roads; on paved roads, quieter movement may be achieved by driving along the shoulders. Dismounted movement can be muffled by moving over soft ground and by having troops lift their feet higher than usual and put them down carefully. In some cases, boots may be wrapped with cloth.

Warsaw Pact forces may muffle or smother certain sounds by creating sound screens which produce louder sounds than the activity they are trying to conceal. The movement of tanks, for example, can be drowned out by artillery fire or low-flying aircraft. Sound broadcasting equipment which simulates various activity may also be used. When this is done, loudspeakers will be set up some distance from the broadcasting station.

6. CAMOUFLAGE PAINT AND CLOTHING

a. *Paint*

Paint is considered an effective means of camouflaging combat and transport vehicles, artillery, and aircraft; it may also be applied to stationary objects such as buildings, aircraft parking aprons, hardstands, and taxiways. Although Warsaw Pact use of camouflage paint in wartime may be widespread, it appears to be rather sparingly applied to ground force equipment in peacetime.

The color of paint used should match the background of surrounding terrain. Both single and multicolors are used, the former when operating in terrain with a single tone such as prairie, snow and sand. Multicolors are used in terrain with varying background, with paint colors corresponding to the color and pattern of surrounding terrain. A Czechoslovakian tank crew handbook, for example, discusses the use of different sets of paint for winter and summer camouflage. White, earth-brown, and dark green paints are used in winter, while sandy-yellow, brick-red, earth-brown, light green, dark green, and black paints are used in summer (Figures 5 and 6).

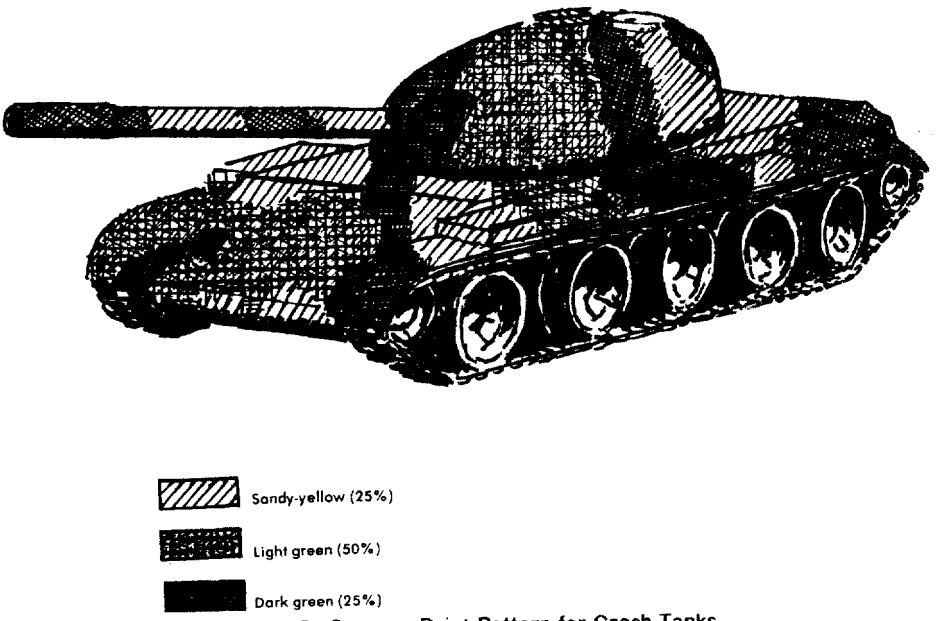

Figure 5. Summer Paint Pattern for Czech Tanks.

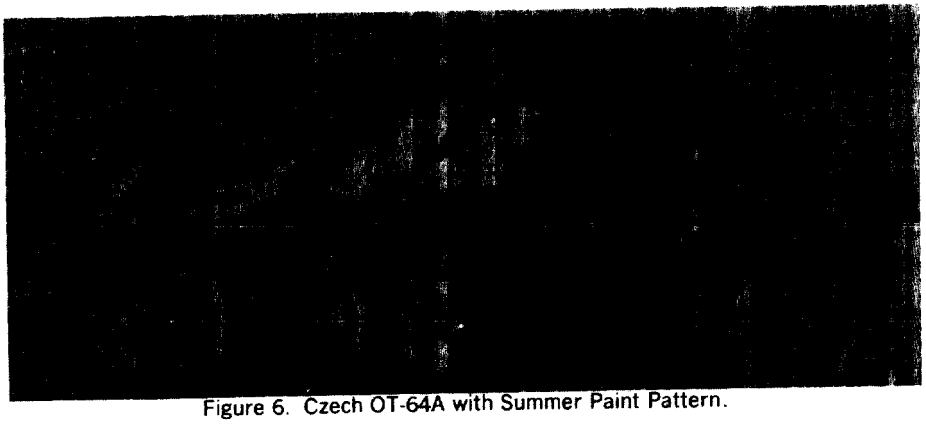

Figure 6. Czech OT-64A with Summer Paint Pattern.

Soviet literature discusses several types of camouflage paint, the most common of which are *protective* and *dazzle (distorting)* paint:

Protective paint is a single color paint which makes equipment less noticeable against a uniform background such as green vegetation, bare earth, sand or prairie. Many weapons and vehicles, for example, are painted a protective dark green color at the factories which produce them. Other protective paint colors are white and sandy-earth.

Dazzle (distorting) paint distorts the external appearance and noticeability of an object by placing on its surface differently shaped and colored spots which correspond in color and brightness to surrounding terrain. It is usually used for painting mobile equipment operating in terrain with a mottled background. During snowless periods,

large spots of three colors are normally used -- green, dark brown (or black), and sandy-earth -- although two or four colors may occasionally be used. A typical summer paint scheme might be 50% green, 25% brown or black, and 25% sandy-earth (Figure 7). With the arrival of autumn, 30-50% of the green paint may be covered with a yellowish paint characteristic of autumn foliage. Winter dazzle paint is used when equipment operates not only in areas where there is snow or melting snow, but also where there are forests, shrubbery, and populated areas. Winter dazzle paint usually consists of two colors: white (75%) and dark green or dark brown (25%).

Examples of the use of camouflage paint on Warsaw Pact equipment are shown in Figures 8 thru 11.

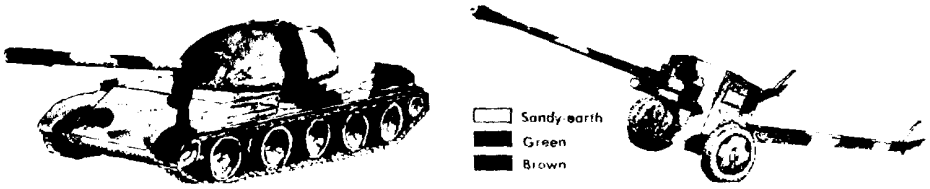

Figure 7. Paint Pattern for Soviet Tanks/Guns.

Figure 8. Mi-24 HIND Assault Helicopter.

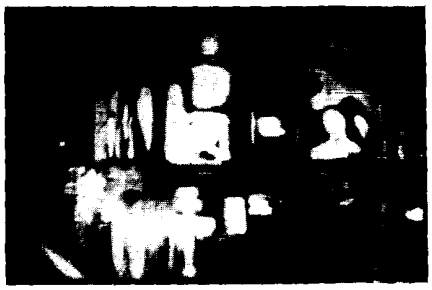

Figure 9. Hand Painted Irregular Patch Pattern.

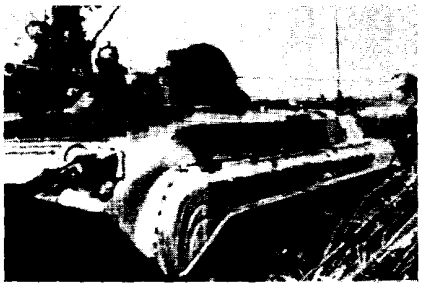

Figure 10. Dazzle Paint on BMP Infantry Combat Vehicle.

Figure 11. Mi-2 HOPLIGHT.

b. *Clothing*

Camouflage coveralls, designed for wear during snowless periods, are worn primarily by snipers, engineers, forward observers, signal, and reconnaissance troops (Figure 12). Coveralls usually have brown, green, gray-green, or gray-yellow spots or splotches and are worn over the regular uniform. They may be hooded, have loops for attaching improvised camouflage material, and slits for access to gear worn underneath. Face masks may be worn when operations are conducted in direct contact with the enemy. Coveralls are available in two versions: reversible and nonreversible. The former is suitable for use against a background of either green vegetation or sand (Figure 13). Coveralls worn against a background of green vegetation are particularly effective when improvised material such as grass, weeds, and twigs are attached. The Soviets believe that when care is taken to adapt to the terrain, troops wearing camouflage coveralls cannot be seen with the naked eye at a distance of more than 20-30 meters. Coveralls also reduce infrared detectability. Regulations require that coveralls be cleaned, dried in the shade, and stored after combat missions. If exposed to the sun for extended periods, they will fade and lose their camouflaging properties.

In winter, white suits consisting of a jacket with hood, trousers, gloves, and a white strap for covering individual weapons are issued (Figures 14 and 15). White cloth (or paint) will also be used to camouflage combat equipment during winter operations (Figure 16).

Fig 12A.

Fig 12B.

Fig 12C.

Figure 12A, B, & C. Camouflage Coveralls.

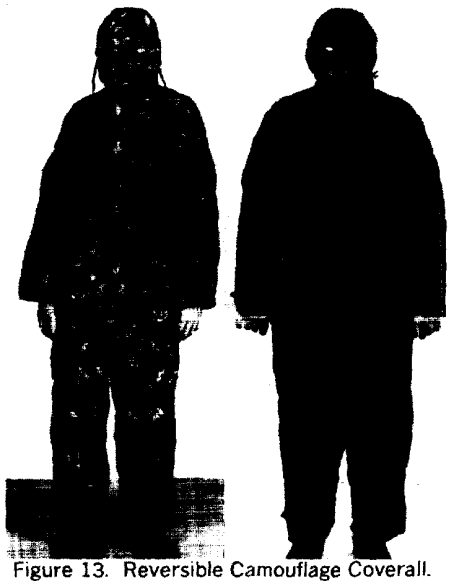

Figure 13. Reversible Camouflage Coverall.

Figure 14. Soviet Reconnaissance Troops.

Figure 15. GDR (East German) Soldier.

Figure 16. Artillery Observation Post.

Approved For Release 2005/03/24 : CIA-RDP83M00171R000300230001-9

7. ARTIFICIAL CAMOUFLAGE SETS AND FIELD EXPEDIENTS

a. *General*

Issued camouflage sets consisting of a frame and cover (net or drape) are widely used by Warsaw Pact ground forces to conceal equipment, movement, military structures, and activity (Figure 17). The frame consists of uprights, braces, stays and anchor supports which provide sufficient strength to hold the cover in the desired position. Regulations specify that frames should be used to avoid draping covers directly over equipment, thereby revealing distinctive shapes. Some vehicles also have brackets welded to them to permit rapid draping without revealing characteristic outlines. In practice, however, covers are sometimes draped directly over equipment (Figure 18).

Covers may be of solid or mesh construction, with natural or artificial material such as pieces of cloth, branches, grass, and straw being attached. Field expedients may also be constructed using, for example, wire, rope, cloth, branches, sod, vegetation, and snow (Figure 19).

Figure 17. Soviet Command Post.

Figure 18. Nets Draped Directly Over Vehicles.

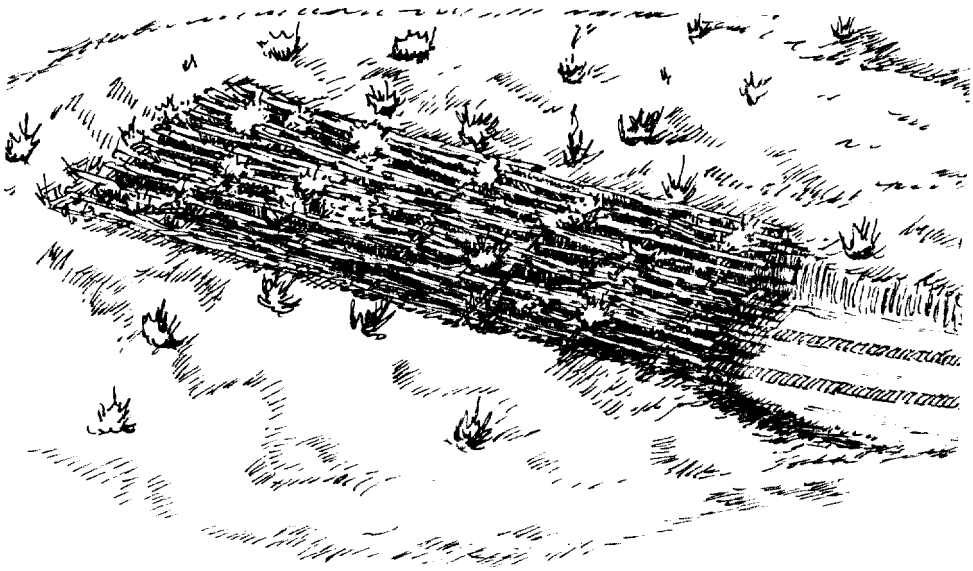

Figure 19. Field Expedient Camouflage Cover.

b. *Types of Covers*

The most recently issued Soviet camouflage set is the MKT series.[3] The MKT nets are 12 x 18 meters and consist of 12 standard interchangeable pieces, each measuring 3 x 6 meters. The dimensions make it possible to construct geometrically uneven and varied covers. The separate pieces are connected to one another by quick release seams (Figure 20). MKT sets are carried on or in tanks, armored personnel carriers/infantry combat vehicles, prime movers, and trucks. They take 5-10 minutes to erect during daytime and up to twice that long at night.

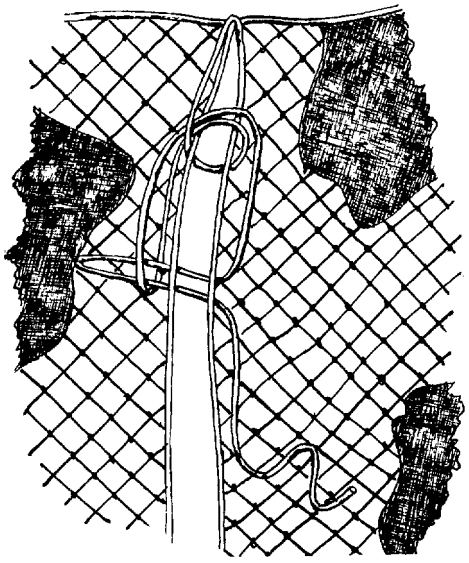

Figure 20. Quick-Release Seam.

Three versions of MKT nets are produced: MKT-L (summer) nets are used for concealing objects against a background of green vegetation or bare ground. They are made of cotton mesh fabric and are reversible. One side is green with brown spots to conceal objects against a vegetation background. The other side is a greenish-earth (dirt) color designed to conceal objects against a bare-earth background. A variation apparently includes a grayish-brown shade for use on desert/prairie terrain. MKT-T (summer) nets are used for concealment against a background of green vegetation. They are cotton mesh, nonreversible, and have pieces of light green, dark green, and yellow fabric attached to them. MKT-S (winter) nets are made of cotton mesh fabric and are designed to conceal against a background of snow.

The following general types of covers are discussed in Soviet military literature:

(1) *Camouflage covers* are designed to conceal vehicles, tanks, guns, mortars, artillery, and other equipment from ground and aerial observation. They touch the ground on all sides and may be flat, convex, or concave (Figure 21). Flat covers are designed for concealing objects which do not rise above the ground (Figure 22); convex covers are used for concealing objects which are above ground (Figure 23); and concave covers are used to conceal equipment located in ravines and depressions. All three types may be used with or without frames.

3 Earlier-issued sets, including some dating to the late 1940s, are still in use.

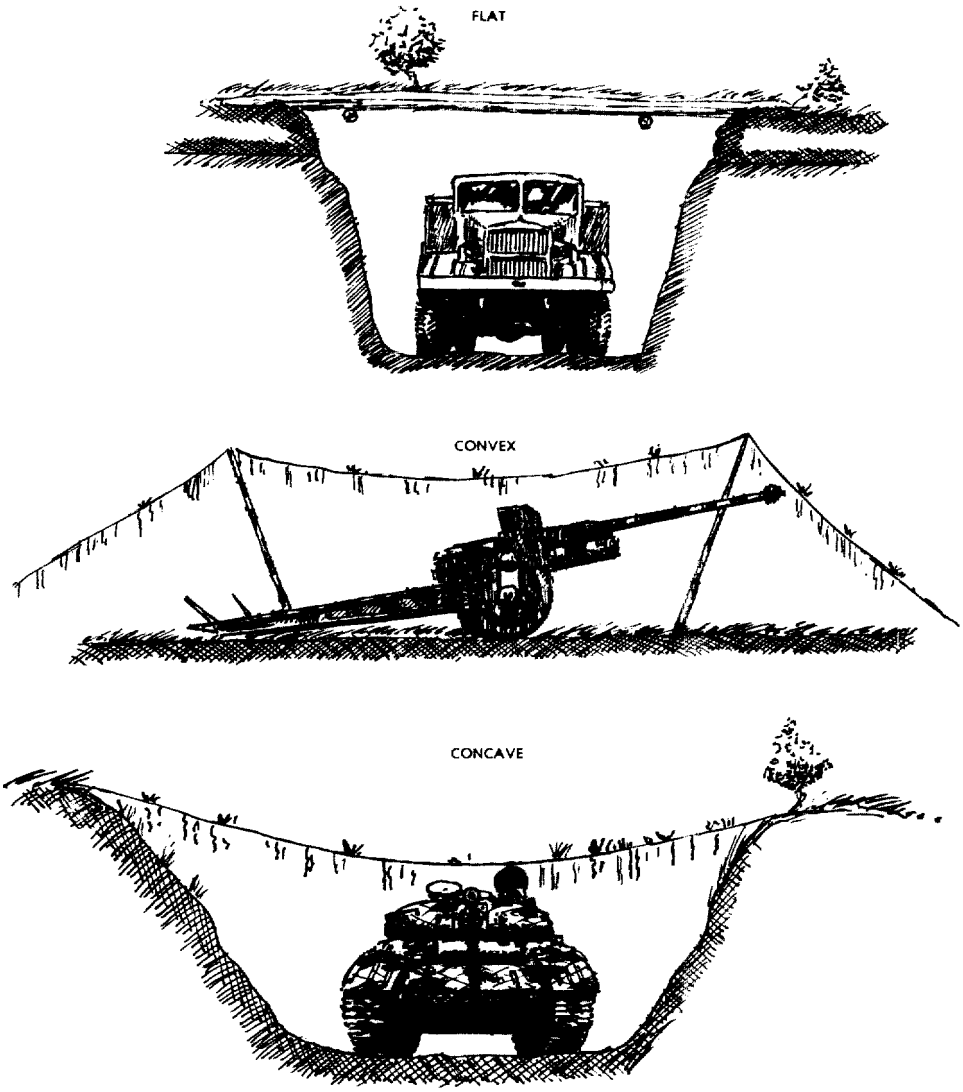

Figure 21. Camouflage Covers.

Figure 22. Flat Camouflage Cover.

Figure 23. Convex Camouflage Cover.

(2) *Horizontal camouflage covers* are designed primarily to conceal objects from aerial observation and are, therefore, more likely to be used where the possibility of enemy ground observation is minimal. They are parallel to the ground, open at the sides, and of sufficient height to permit convenient maintenance and rapid entry/egress of the object being concealed (Figure 24). Covers should extend well beyond the concealed object to prevent angular aerial observation (Figure 25). Additional protection against observation can be achieved by placing covered equipment adjacent to bushes, hedges, trees, or manmade structures. Horizontal covers are most frequently used to conceal transport and combat vehicles, prime movers, mobile means of communication, portions of trenches, and groups of small items such as ammunition and gasoline barrels. Because they often conceal vehicles and permit rapid entry/egress, they are frequently located near highways, roads, or paths. The color, texture, and pattern of the covers and any artificial or natural material attached to them should match the surrounding terrain. The center of the covers -- that part directly over the concealed objects -- should contain the heaviest layer of camouflage material. *Camouflage awnings* differ from horizontal covers only in that they lie not only parallel to the ground, but also hang or slope to the ground (Figure 26). In populated areas, another variation of horizontal covers called *shed screens* may be encountered (Figure 27). They are usually attached to houses or other structures for the purpose of shielding vehicles and supplies from aerial observation and are commonly constructed from wood, tin, or other locally available material.

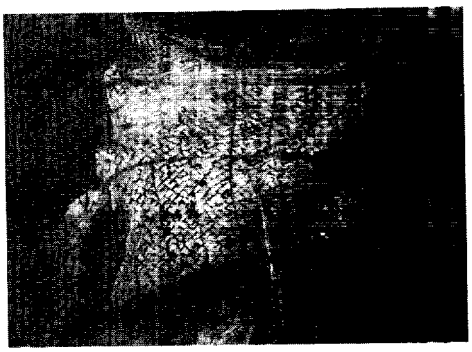

Figure 24. Horizontal Camouflage Cover.

Figure 25. Improper Use of Horizontal Camouflage Cover.

Figure 26. SA-4 GANEF Missiles.

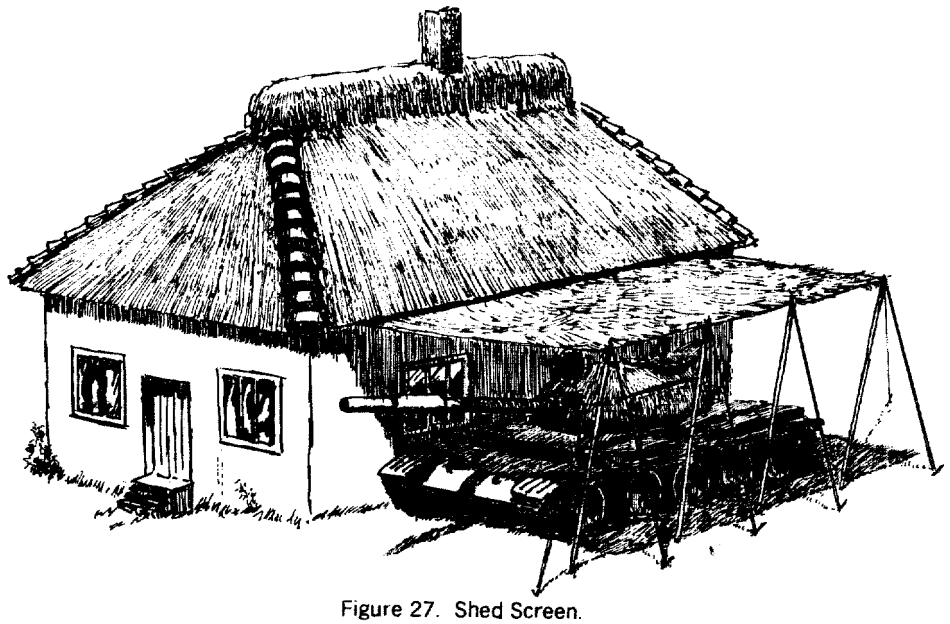

Figure 27. Shed Screen.

(3) *Vertical camouflage* consists of screens or nets designed primarily to conceal objects from ground observation, although they may also offer some protection against aerial reconnaissance. Several types including some which are unusual, if not unique, may be encountered:

(a) *Trench screens* are set up to conceal certain portions of trenches and the movement of troops through trenches. The Soviets are aware that it is difficult to conceal an entire trench system, especially from aerial observation; they therefore usually concentrate on concealing the most important parts: weapons and firing positions, observation posts, communication trenches, and major intersections. Consequently, screens usually do not extend continuously along the length of a trench system, but are placed in segments which are 2-3 meters or more in length and 50-70 centimeters in height (Figure 28). Issued nets may be used, but it is just as likely that field expedients will be constructed using brush, branches, straw, and other natural foliage (Figure 29). Screens may also be constructed by sticking branches or small trees into the ground or erecting walls of sod, snow, or ice. Openings are left in screens for observation and firing. Nets may be used in conjunction with field expedient screens, e.g., to conceal weapons in firing positions (Figure 30).

(b) *Overroad camouflage* is set up to conceal traffic from enemy ground observation along roads. Nets or screens are usually used along short stretches of open road and are placed at sufficient height (about 6-7 meters) to permit the passage of vehicles (Figure 31).

(c) *Roadside camouflage* screens serve to conceal the movement of troops and equipment from lateral observation; they are often used in conjunction with overroad camouflage (Figure 32). The screens are 3-4 meters or more in height and are usually employed along relatively short, exposed portions of road. Issued camouflage nets may be used, or screens may be constructed from branches, straw, or brush. The frame

consists of supports driven into the ground 3-5 meters apart. Screens may also be formed by driving cut trees or bushes into the ground. Although roadside/overroad camouflage may not prevent the enemy from determining that movement is taking place, it hinders a precise determination of the nature and volume of that movement. When possible, however, movement will take place along naturally shielded routes, obviating the need for roadside/overroad camouflage.

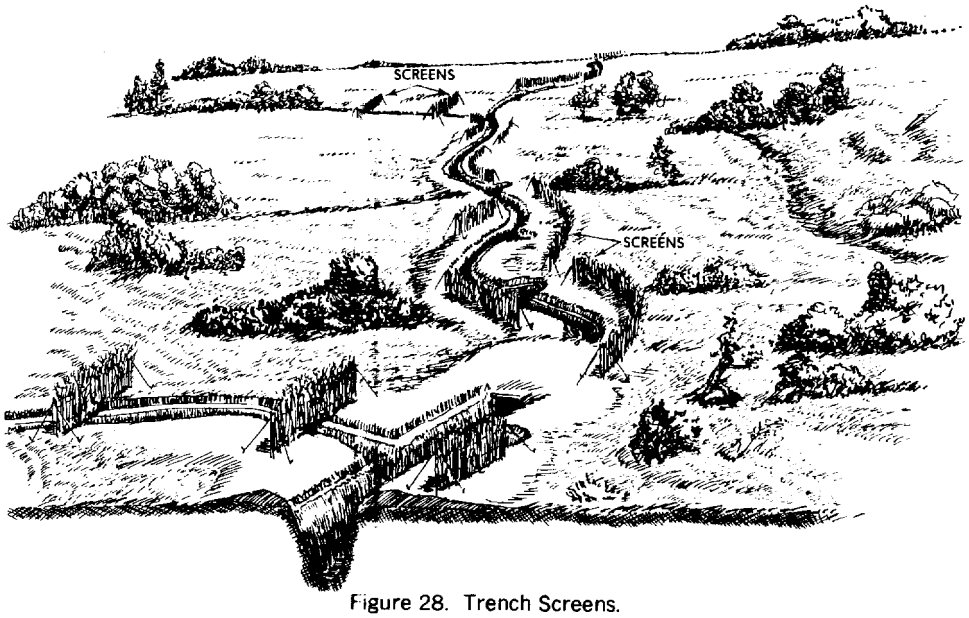

Figure 28. Trench Screens.

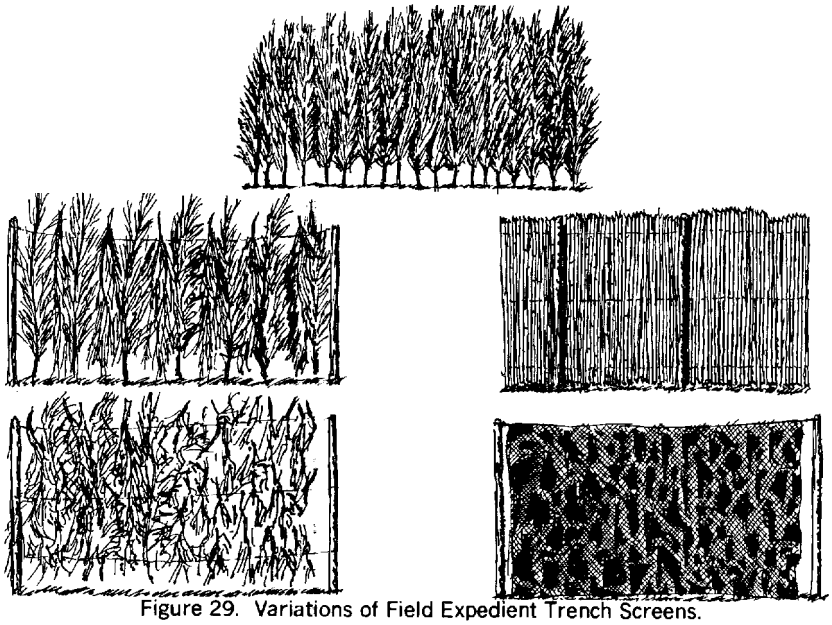

Figure 29. Variations of Field Expedient Trench Screens.

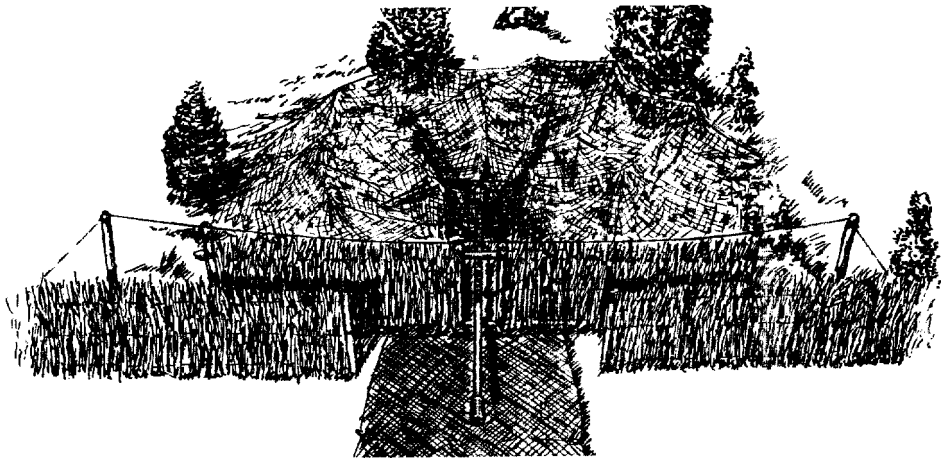

Figure 30. Antitank Gun Concealed by Net and Vertical Screen.

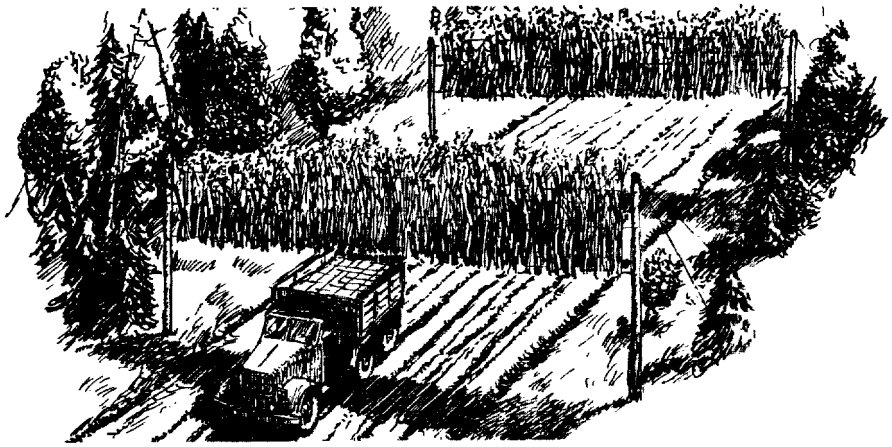

Figure 31. Overroad Camouflage.

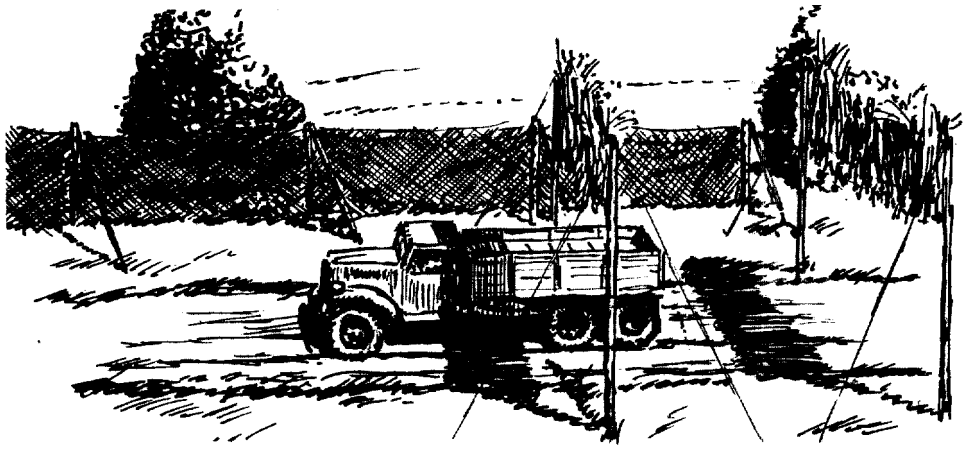

Figure 32. Roadside/Overroad Camouflage.

(d) *Camouflage fences* are used to conceal equipment, troops, and engineer work from enemy ground observation. In design they do not differ from roadside camouflage. They consist of nets or field expedient frameworks on which branches, grass, straw, or nets are attached. They can also be created by driving cut trees or branches into the ground. Their height is determined by the size of the concealed object and the relative proximity of the enemy. They can be difficult to detect if care is taken to blend and shape them to conform with natural vegetation and the contour of the terrain.

(e) *Individual camouflage* blinds or screens may be constructed by soldiers in the field using locally available material, or collapsible fan-shaped wire frames covered with netting may be issued (Figure 33). In regard to the latter, dyed gauze is fastened to the netting, and irregularly shaped patches of dyed cloth are sewed on the gauze. The gauze and cloth patches are issued in three colors: green, yellow, and brown. The wire frame has a clamp at the joint to hold the screen open and pickets to fasten the screen to the ground. When erected, it resembles a bush and conceals a prone rifleman. Slits are provided for observation and firing.

(4) *Sloping (Inclined) camouflage* is a variety of vertical camouflage differing basically only in that its lower edge touches the ground, forming an angle of 30-60 degrees (Figure 34). The upper edge is usually attached to a tree, bush, fence, or manmade structure. Sloping camouflage can protect against both ground and aerial reconnaissance and is effective in eliminating shadows. It may be used to conceal parked equipment and small field ammunition and storage dumps.

(5) *Distorting (Deforming) camouflage* is designed to distort characteristic outlines, shapes and shadows, and the nature or purpose of certain objects, structures, or facilities particularly those which cannot be readily disguised by other means. It may be applied to either mobile or stationary objects. Distorting camouflage elements usually consist of horizontal, vertical or inclined panels, superstructures, and umbrella or fan-shaped fixtures attached to or adjacent to the object to be distorted (Figure 35). These distorting elements may be garnished with improvised camouflage material.

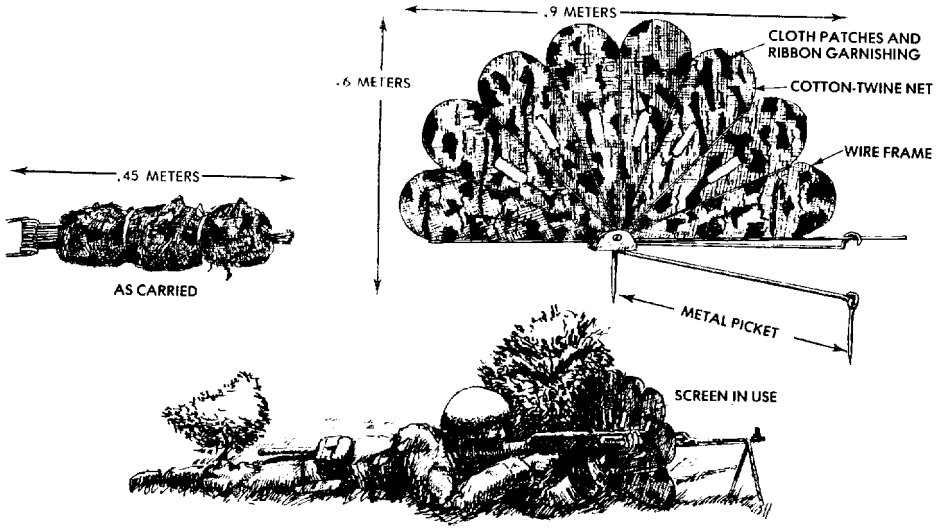

Figure 33. Collapsible Fan-shaped Rifleman's Screen.

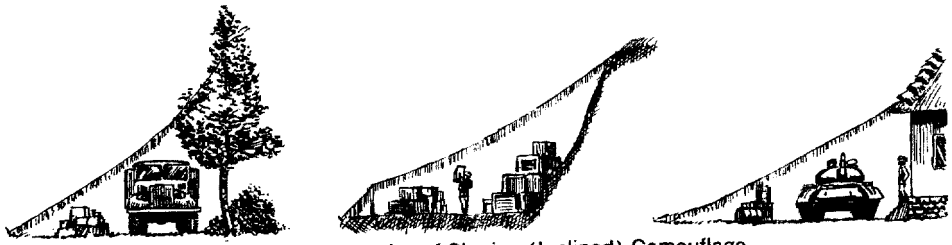

Figure 34. Examples of Sloping (Inclined) Camouflage.

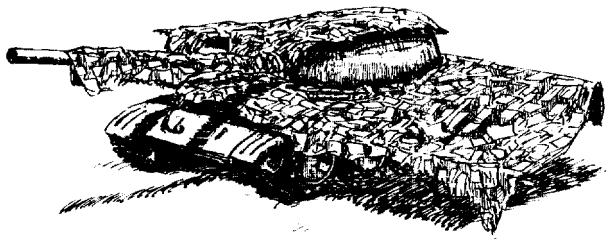

Figure 35. Distorting (Deforming) Camouflage.

c. *Specialized Camouflage Sets*

There are many specialized sets designed to conceal specific objects. Figure 36, for example, illustrates a camouflage fringe which can be wrapped around a soldier and/or machinegun. Another specialized cover designed to conceal a machinegun consists of an irregular-shaped piece of cloth tied to a wire frame with openings for observation and the machinegun barrel (Figure 37). In addition, camouflage sets are designed to be used with specific combat vehicles. Czechoslovakian military literature, for example, describes a camouflage set issued for concealing tanks and armored personnel carriers. It includes a 12 x 12 meter net which consists of four 6 x 6 meter nets laced together with connecting cords which can be quickly disengaged from linking hooks. The net is emplaced in the following manner:

- The gunner and loader take the net out of its bag, and the entire crew stretch it over the dug-in tank.
- The loader hammers in corner pegs.
- To permit fire and observation, the gunner releases a few hooks, freeing the turret and gun, which are then camouflaged separately using natural foliage (Figure 38).
- To drive the tank out of its emplacement, the commander releases several hooks, and both halves of the net fall to the side.

d. *Canvas Covers*

Canvas covers or tarpaulins are often used to cover vehicles and weapons, particularly when they are stored, housed in garrison, or being transported by rail. Although the primary purpose of the covers is to protect equipment from the elements, they can also make it difficult to identify specific types and models of equipment (Figure 39).

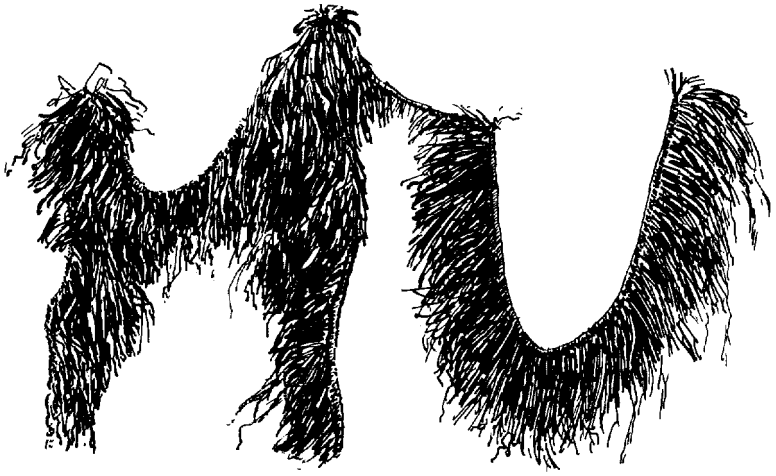

Figure 36. Camouflage Fringe.

Figure 37. Camouflage Cover for Machinegun.

Figure 38. Camouflage Net Over Dug-in Tank.

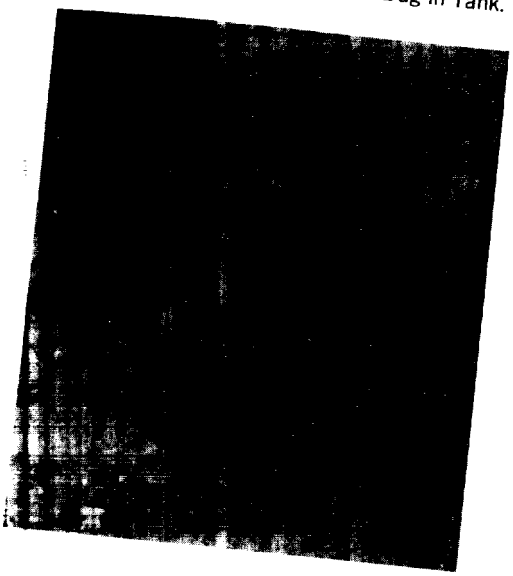

Figure 39. Tracked Vehicle--
Possibly Self-propelled Artillery.

e. *Concealment of Side/Turret Numbers*

Small pieces of cloth or other material may be used to conceal turret or side numbers on armored vehicles to prevent hostile observers from associating equipment with specific units (Figure 40). Side numbers are most likely to be covered during deployments, field training exercises, or movement to or from training areas. Turret/side numbers may also be altered or replaced with a completely different series. This may be accomplished by using white tape or paint and may be crude enough to be discerned by alert observers. Any obvious display of side numbers on a few vehicles among other vehicles with covered numbers may be an attempt to deceive.

Figure 40. Covered Turret Numbers During Rail Movement.

8. COLUMN MOVEMENT

The Soviets believe that moving columns are likely to attract enemy attention, but the accuracy of enemy reconnaissance and losses due to artillery/aerial interdiction can be appreciably reduced if the following techniques are practiced:

- Move during hours of darkness, snow, rain, fog, or dense, low cloud cover.
- If necessary to move during daylight hours of good visibility, it may be desirable to move small groups of vehicles at timed intervals in bounds from one natural screen to another.
- Keep columns as short as possible to reduce enemy interest and the intensity of artillery/aerial bombardment.
- Apply camouflage paint and/or vegetation to vehicles so that they match the background of surrounding terrain.
- Fully exploit terrain features by selecting routes through forests or roads lined with trees, bushes, or other natural screens; keep columns to the shaded side of roads; during halts, park vehicles in the shadows cast by trees, bushes, or manmade structures. (Shadows cast by vehicles are often easier to detect -- especially from the air -- than the vehicles themselves. In general, objects located in the shadow of another object are not noticeable to aerial observers.)

- Maximize use of issued camouflage sets and improvised material, including roadside and overroad nets and screens along exposed portions of road; drape nets over brackets welded to vehicles.

- Schedule halts -- especially day halts -- in areas which offer the best natural camouflage, e.g., dense forests.

- Avoid movement along roads which may create dust clouds. If necessary, consider watering roads to prevent dust clouds.

- If possible, use unpaved roads to reduce noise from tracked vehicles, especially when in close proximity to the enemy.

- Avoid using undimmed headlights or signal lights during night marches, but assure that routes are properly marked.

- Use camouflaging and/or decoying smoke screens when appropriate.

- Plan movement so that columns arrive in assembly/concentration areas before dawn, and assure that camouflage measures are implemented before daylight.

- During halts, do not permit troops to move about, gather, speak loudly, or light fires.

- Move columns in false directions, and make frequent changes in column direction.

- Practice radar countermeasures, primarily by maximizing the use of natural screens (woods, reverse slopes, manmade structures) and fields of nonvisibility, i.e., terrain which is not subject to observation by ground reconnaissance. When necessary, radar corner reflectors will be employed (Figure 41).[4] These may be placed along exposed portions of routes and in day or night assembly/concentration areas. During daylight movement, corner reflectors may be placed on poles at a height of 3-3 1/2 meters, 25-30 meters apart. At night in concentration areas, reflectors are placed 5-6 meters from operational equipment. Should dummy/decoy equipment be used, reflectors should be placed in or near such equipment. Simulated march movement can be achieved by mounting reflectors on motorcycles or vehicles.

- When so directed by the senior commander, establish columns of dummy/decoy equipment and/or false concentration areas containing dummy/decoy equipment. "Animate" dummy/decoy equipment with actual or simulated activity characteristic of operational equipment. (See #10, DUMMY/DECOY EQUIPMENT.)

---

4 Radar corner reflectors reflect the emission of enemy radars, creating interference (light blips) on the display screens of the radars.

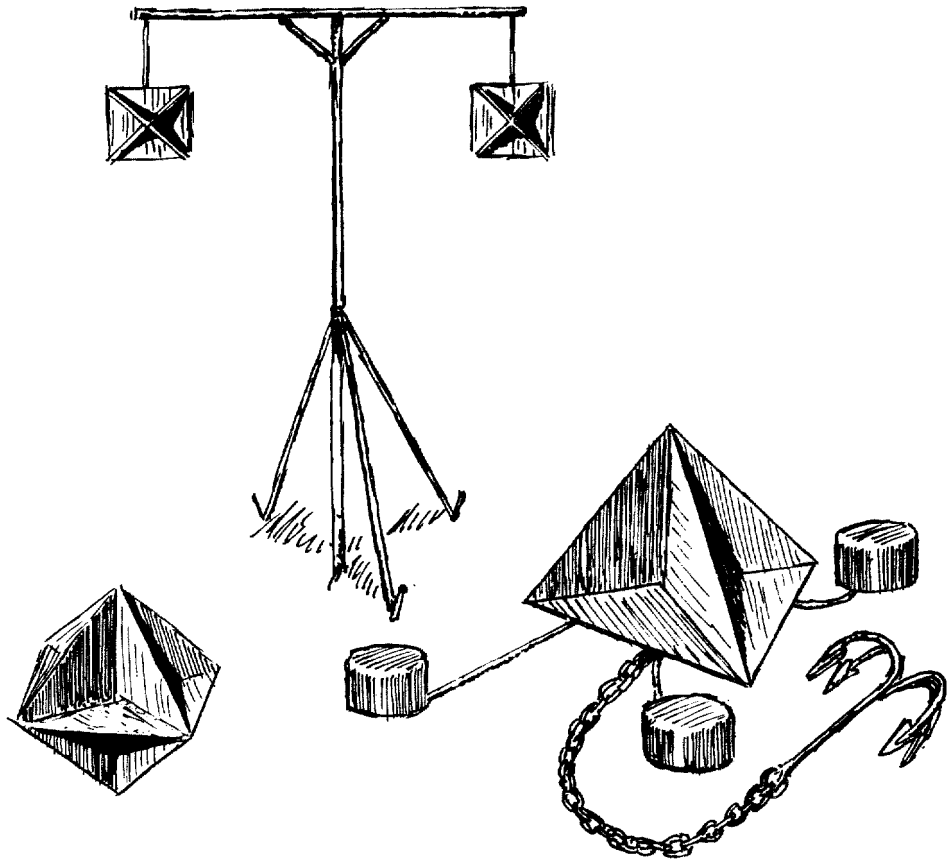

Figure 41. Radar Corner Reflectors.

9. SMOKESCREENS

The Soviets employed smokescreens extensively during World War II, and they remain convinced of their effectiveness for increasing the tempo of an offensive, concealing troops and equipment, achieving surprise, and reducing losses. Although the Soviets continue to stress the traditional use of smoke to blind, conceal, and deceive, they are aware of other possible applications on the modern battlefield, e.g., protection against thermal radiation caused by nuclear detonations, degrading the effectiveness of antitank guided missiles and laser-guided munitions, and interfering with infrared, television, night vision, and radar reconnaissance instruments.

Commanders are encouraged to employ smoke in accomplishing their combat missions, and field exercises are used to provide troops with practical experience in the value, limitations, and tactical use of smokescreens. Smoke may be employed not only in daytime, but also on bright nights, or when the enemy employs illumination devices at night. A wide variety of smoke producing devices are available for use: hand and rifle grenades, pots, drums, barrels, generators, mines, aerial bombs, mortar, artillery, and probably rocket launcher projectiles (Figure 42). Smoke may also be dispensed from fixed and rotary wing aircraft, motor vehicles, armored personnel carriers/infantry combat vehicles, and tanks.

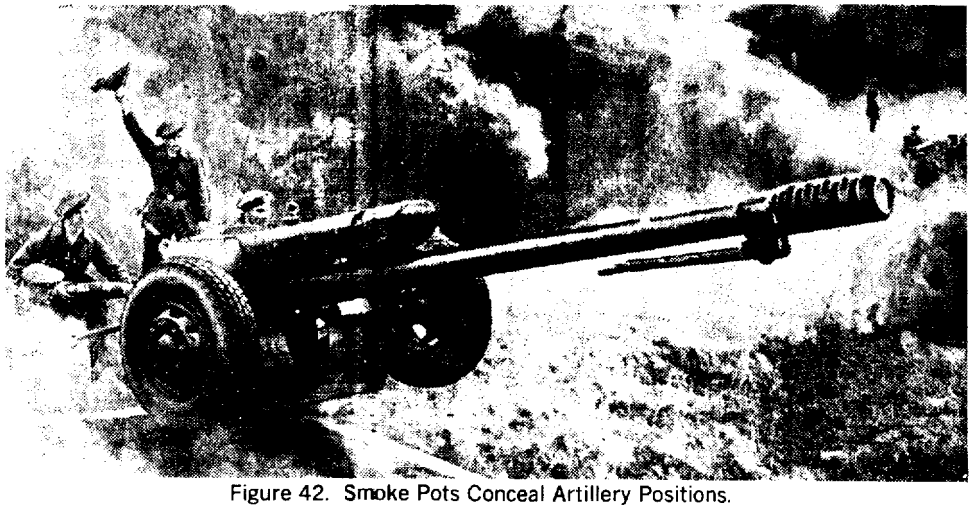

Figure 42. Smoke Pots Conceal Artillery Positions.

Special emphasis is attached to the dissemination of smoke by combat vehicles. By reason of their mobility, vehicles can to some extent lay effective smokescreens even when unfavorable meteorological conditions exist. In addition, they can dispense smoke over large areas on short notice. A few combat vehicles, such as the T-54 tank and the ASU-85 assault gun, may carry externally mounted smoke barrels (Figure 43). Many armored vehicles, however, have smoke generating systems incorporated into their design, including tanks such as the PT-76, T-10M, T-55, T-62 and T-72, as well as the BMP infantry combat vehicle (Figure 44). These vehicles can create smokescreens by injecting raw diesel fuel directly into the engine exhaust manifold, causing vaporization of the fuel. The vaporized fuel is forced through the exhaust outlet, resulting in the release of thick smoke (Figure 45).

Figure 43. ASU-85 with Externally Mounted Smoke Barrels.

Figure 44. BMP Infantry Combat Vehicles.

Figure 45. T-62s Employing Integral Smoke Generation Capability

The Soviets identify three types of smokescreens:

Blinding smoke is disseminated on enemy positions to interfere with observation and aimed fire. Command/observation posts and firing positions are likely targets for blinding. Most types of smoke producing devices may be used for blinding if meteorological conditions are favorable; otherwise, mortar/artillery/rocket launcher projectiles or aerial bombs may be used. Based on their experience, the Soviets believe that the effectiveness of fire from enemy positions blinded by smoke decreases about 10 times, and casualties can be reduced by as much as 90 percent.

Camouflaging smoke is designed to conceal the location, movement, and intentions of friendly troops from ground and aerial observation. It may be employed in areas occupied by friendly troops, between opposing forces, or on the flanks. It is most likely to be employed in circumstances in which troops are particularly vulnerable to attack: crossing open areas, bridges, rivers, defiles, passes, and during deployments or movements in close proximity to the enemy. Most types of smoke producing devices are suitable for camouflaging purposes if meteorological conditions are favorable. The Soviets believe that the area covered by a camouflaging smokescreen should be about five times greater than the object(s) being concealed to prevent the enemy from accurately estimating the location of targets within the screen. The object(s) being concealed should not be located in the center of the smokescreen. When appropriate, smokescreens should not only conceal troops and equipment, but any nearby local objects which might serve as reference points for enemy fire. During offensive operations, the Soviets consider a camouflaging smokescreen to be laid correctly when attacking units are able to advance behind it while maintaining their assigned axes of advance and retaining sight (directly or indirectly) of their objectives. This is accomplished by a thorough study of terrain and meteorological conditions and by selecting highly visible reference points both ahead and in the rear, in line with the axes of the attack. The Soviet believe that the effectiveness of enemy fire delivered on smoke-concealed targets is reduced four times, and that losses among tank and infantry units can be cut by 60-80 percent.

Decoying smoke is normally employed in areas not occupied by friendly troops for the purpose of deceiving the enemy in regard to the actual location, movement, and intentions of friendly forces. It is often employed simultaneously with camouflaging smoke screens, particularly during deployments and river crossing operations.[5]

5 During river crossing operations, smoke producing devices may be placed on islands, rafts, or boats. Certain types of Soviet smoke pots are bouyant and will float in the upright position. These may be placed directly in the water.

The Soviets are aware that even the skillful use of smoke may hinder friendly actions, observation, control, and aimed fire. They intend to minimize the adverse effect on their operations by assuring that smoke producing devices are properly situated in regard to terrain, and that the commencement and termination of smokescreens conform with the actions to be carried out by troops. Pyrotechnics are often used to coordinate the initiation and termination of smokescreens. Special importance is attached to meteorological conditions, particularly the speed and direction of wind and the vertical stability of the air.

The Soviets consider a flank (lateral) wind -- one which blows parallel or near parallel to the front -- to be the most advantageous from the standpoint of time and resources, because it permits the use of almost the entire length of the smoke cloud. The most favorable meteorological conditions for employing smoke include a wind that is stable in direction with a speed of 3-5 meters per second. In regard to the vertical stability of the air, the surface layers of air should be either colder than the upper layers (an inversion) or the same temperature as the upper layers (an isotherm).

10. DUMMY/DECOY EQUIPMENT

a. *General*

Dummy/decoy equipment models are considered of great value in simulating activity where there is none, thereby diverting enemy attention from actual targets. The Soviets employed dummy/decoy equipment extensively during World War II with some noteworthy success, and they have continued to develop and deploy such equipment.

Dummy/decoy models may be made to represent almost any object, but those most likely to be encountered are personnel, tanks, armored personnel carriers, mortars, artillery, trucks, aircraft, missiles, field kitchens, and engineer works such as personnel and communication trenches, pillboxes, command/observation posts, firing positions, bridges, and ferries. Entire dummy/decoy installations such as airfields or petroleum storage facilities may be constructed or made to appear active.

Stationary dummy/decoy equipment may be constructed by troops for immediate use in the field using whatever material is readily available: brushwood, poles, planks, logs, wire, straw, dirt, snow, fabric, canvas, heavy paper, or parts of destroyed equipment (Figures 46 and 47). More sophisticated collapsible models may be constructed in advance by engineers for use when needed (Figure 48). During World War II, large reserves of prefabricated models were kept in the rear and transported in collapsed form by rail or truck to needed areas (Figure 49).

Engineer-constructed collapsible models usually consist of a frame and cover. The frame is normally made of wood, wire, or metal pipe and is simple in design and easy to assemble. The cover consists of fabric, canvas, plywood, tar paper, sheet iron, cardboard, or rubber. In some cases, only the most characteristic parts of dummy equipment will be constructed by engineers, e.g., the turret of a tank or cab of a truck. Other parts may be made by troops from locally available material.

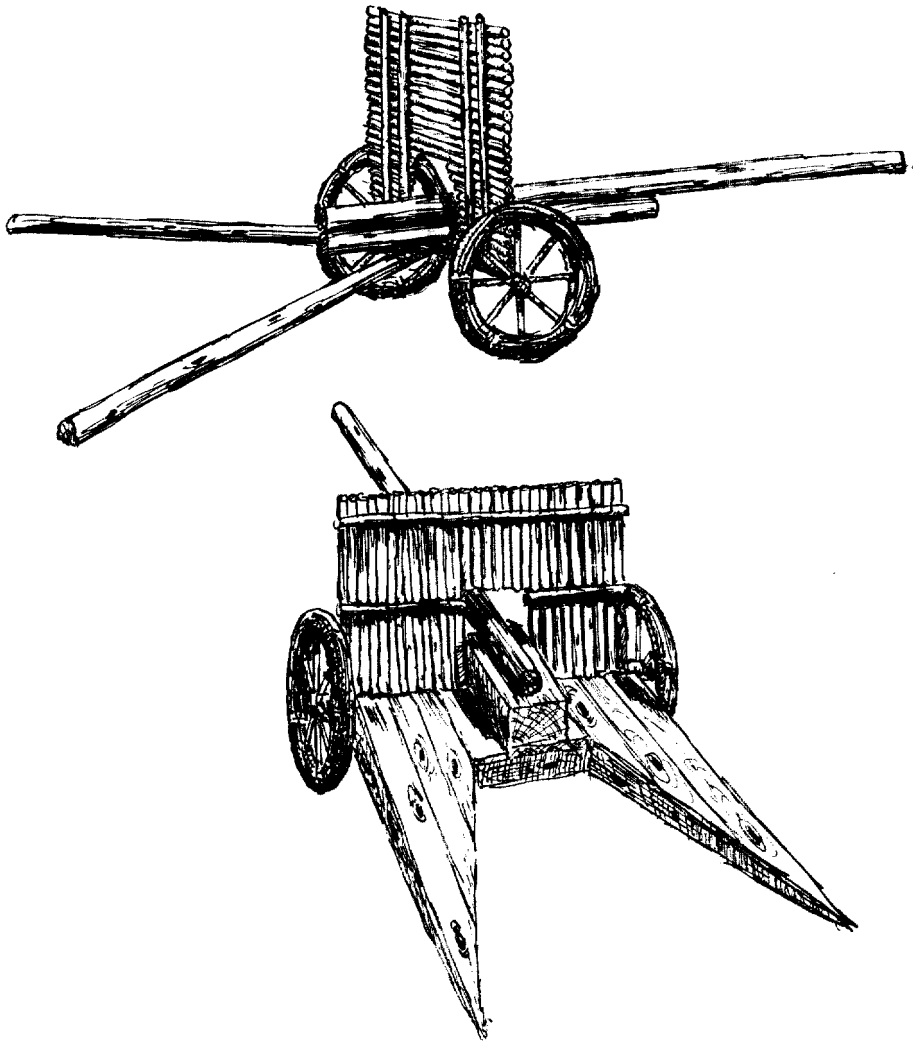

Figure 46. Field Expedient Dummy Guns.

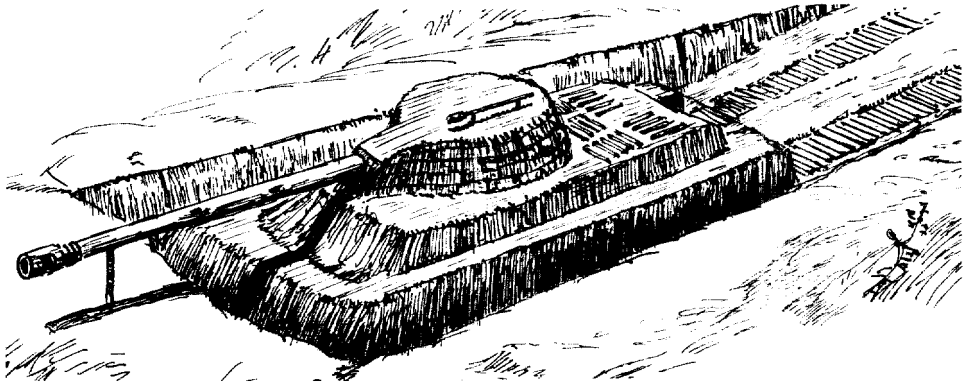

Figure 47. Dummy Tank in Pit.

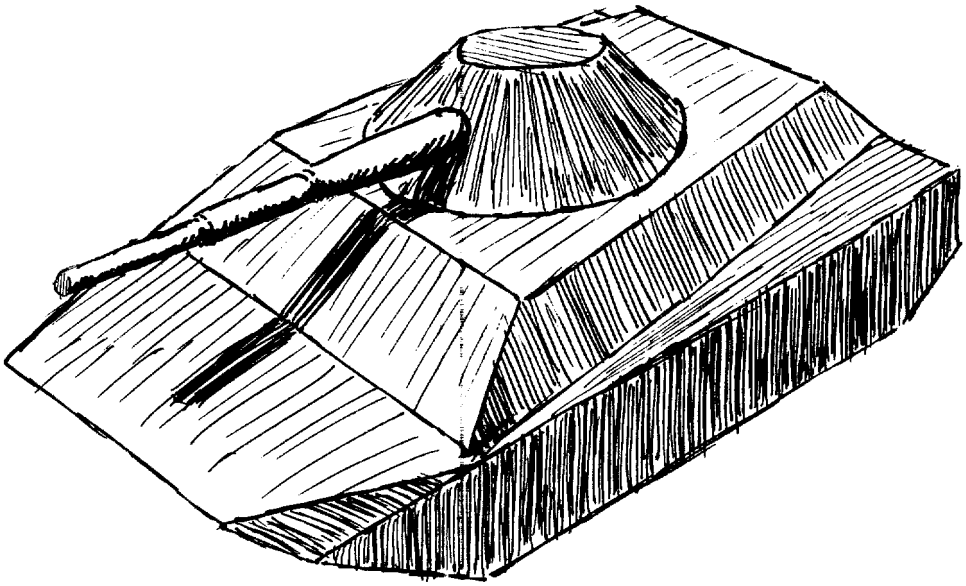

Figure 48. Dummy BMP.

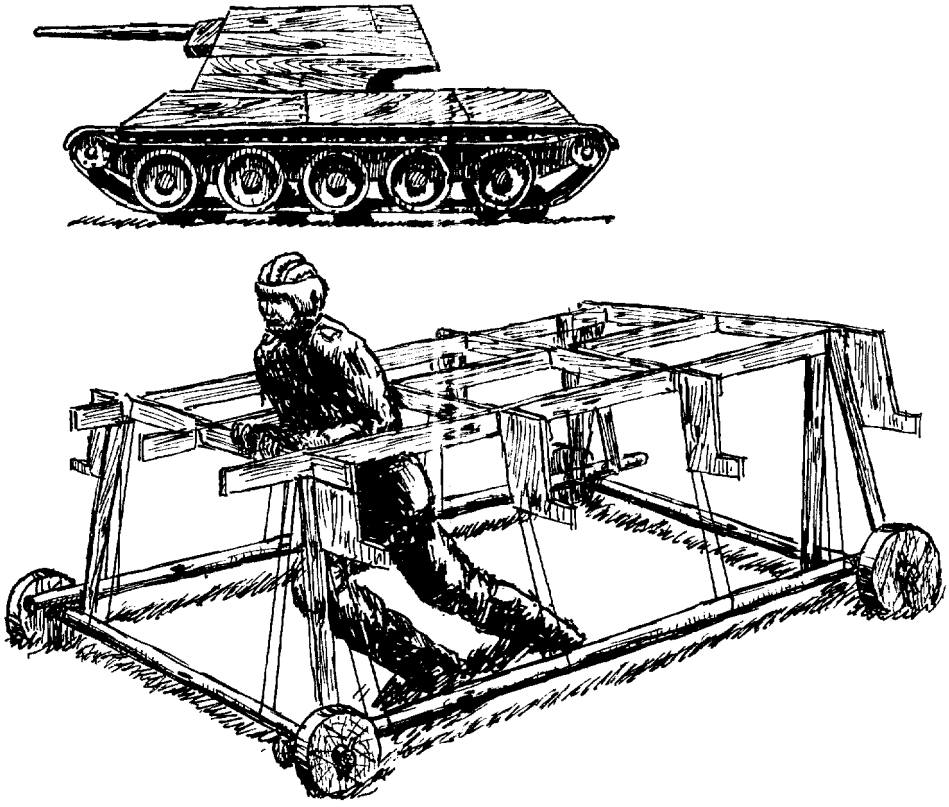

Figure 49. Collapsible Wooden Dummy Tank (World War II).

b. *Employment*

In order for dummy/decoy equipment to be used successfully, the Soviets believe the following conditions must be met: (1) Such equipment must be employed in areas where the enemy can reasonably expect to find it, i.e., placement must be tactically sound. (2) Dimensions and appearance must correspond to operational equipment. Vertical dimensions, however, can be reduced as much as 30 percent, if equipment is to be exposed solely to aerial reconnaissance. (3) Dummy/decoy equipment must be camouflaged well enough to conceal any obvious defects in construction, but not well enough to prevent enemy detection. In most cases, the desired impression to be gained by the enemy is that operational equipment has been incompletely or poorly camouflaged. (4) Areas in which dummy/decoy equipment is placed must be "animated" by actual or simulated activity characteristic of operational equipment. "Simulation teams," which include engineers, may be used for animation purposes, as well as operational equipment.

c. *Examples of Animation and Simulation*

(1) *Artillery Positions*

False artillery positions usually consist of dummy guns placed in prepared positions (Figure 50). Emplacements may be constructed specifically for use by dummy guns, or positions previously occupied by operational equipment may be used. Dummy positions may be constructed simultaneously with and in the same area as actual positions, or they may be constructed earlier to draw enemy attention away from areas where operational weapons will be emplaced. In especially important areas, as many as two false firing positions may be constructed for every active position, with the former located no closer than 200-250 meters from the latter.

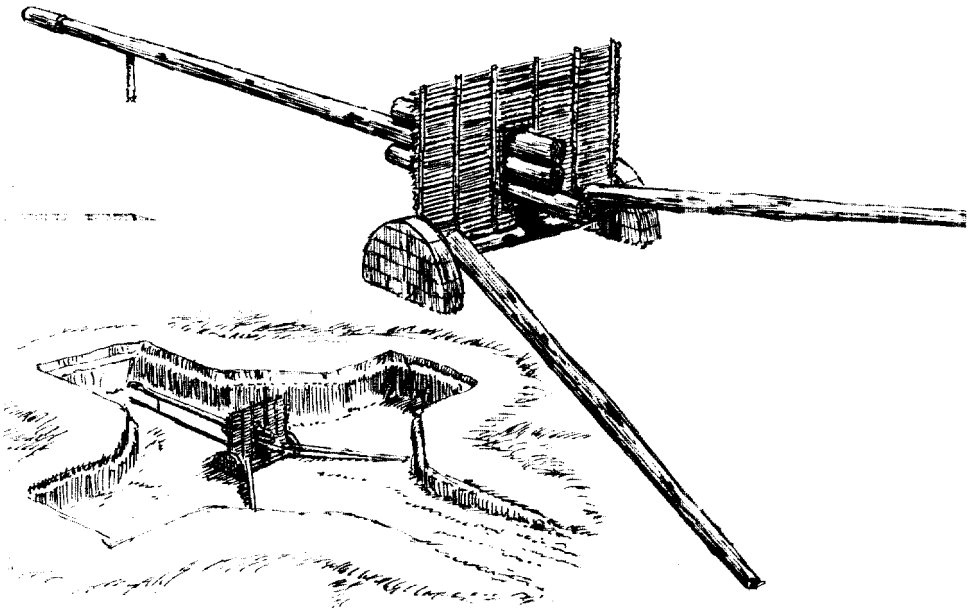

Figure 50. Dummy Gun in Pit.

In some cases, enemy attention to false positions may be invited by emplacing and firing operational weapons and then replacing them with dummy guns. Other methods used to animate false artillery positions include: the use of explosives or the broadcasting of sounds to imitate fire; constructing false access roads, laying tracks, and increasing track activity over a period of time; repairing positions damaged or destroyed by enemy fire; the simulated delivery of ammunition and the display of ammunition boxes; trampling or burning grass near the muzzles of guns; and imitating the presence of troops by constructing false personnel trenches, bunkers, observation posts, and field kitchens. In addition, small groups of troops may occupy or rotate through false positions and fire at enemy aircraft or positions. During bombing, strafing, or artillery strikes, these troops may imitate fires and destruction by throwing bottles filled with combustible mixtures. Poor light discipline will be displayed at night.

(2) *Aircraft/Airfields*

Dummy/decoy aircraft may be placed at active or inactive airfields. They may be crudely constructed -- including models made of snow -- or may be of sophisticated engineer design and construction.

Although false airfields may be constructed, existing inactive airfields are likely to be used to simulate active airfields. In addition to dummy and nonoperational aircraft, a few operational aircraft are likely to be "based" at decoy airfields and periodically take off and land. Small groups of troops will also likely occupy decoy airfields and perform characteristic activity. Live air defense weapons may be present and fire at enemy aircraft.

(3) *Columns or Concentrations of Vehicles*

False columns or concentrations of armor and other vehicles may be "brought to life" by the movement of dummy/decoy equipment. Special attention may be given to the use of decoy columns of dummy equipment and the simulation of march movement. The techniques the Soviets have employed to accomplish this are as follows: Dummy equipment is set up on designated march routes at night or during periods of limited visibility. Movement may be accomplished by towing with the aid of a system of ropes, winches and windlasses; pushing by soldiers located inside dummy equipment; or by breaking down collapsible models and transporting them by vehicle. During darkness or periods of limited visibility, entire columns of vehicles may be broken down and moved along the same march routes or to other routes. Decoying and/or camouflaging smokescreens may be employed in conjunction with decoy vehicle columns.

In regard to false concentration areas, it is considered necessary to move troops and operational equipment through areas in which dummy/decoy equipment is located. A false concentration area for a motorized rifle division, for example, may periodically be occupied by elements of motorized rifle, tank, air defense, and artillery units. Other methods of animation in false concentration areas include imitation of fires and destruction during enemy air/artillery strikes; the broadcasting of recordings of engine and track noise; the laying of wheel and tank tracks; the kindling of campfires at night; and the presence of live air defense weapons to fire at enemy aircraft. When appropriate, radar corner reflectors may be placed in or near dummy equipment.

(4) *Engineer Works*

False engineer works will generally correspond to the configuration of actual positions, except for the depth of excavations, which can be reduced by 50-60 percent; sixty centimeters or less is usually considered sufficient depth. The illusion of greater depth may be created by spreading a thin layer of dark material (branches, grass, peat) on the bottom of excavations, or by using dark paint or soot. Troops will periodically occupy false positions and fire at enemy aircraft or positions.

(5) *River Crossing Sites*

False river crossing sites may be prepared at the same time or somewhat earlier than actual crossing sites. Special efforts will be made to camouflage and conceal the latter, while enemy attention is hopefully focused on the former.

Dummy models of tanks, trucks, and other equipment may be set up on roads or cross-country routes leading to false crossing sites. Sound recordings of engine and track noise may be broadcast. Operational vehicles may be dispatched toward false sites; these same vehicles or other vehicles dispatched at the same time may make the actual crossings. Camouflaging and decoying smokescreens will be employed.

During World War II, the Soviets effectively employed false bridging and ferries. In regard to the former, they sometimes constructed only shore supports plus one or two trestle supports and then laid construction material on and near the supports. In other cases, false bridges were completed and dummy equipment placed on them. When false ferries were used, dummy equipment was placed on them and moved to the opposite river bank. Several factors, however, would seem to mitigate against the widespread Soviet employment of such deliberate, elaborate, and time-consuming methods during the blitzkrieg-type offensive which they anticipate mounting -- if necessary -- against NATO in Western Europe.[6]

11. DEMONSTRATION AND DIVERSIONARY ACTIONS

Warsaw Pact forces will use demonstration and diversionary actions, together with other measures, to conceal the main thrust of their offensive operations. In a sector where an offensive is planned, an attempt may be made to create an impression of relative inactivity or activity which is similar to that taking place in adjacent sectors. Activity which is not characteristic of impending offensive operations may also be initiated, e.g., the simulation of troop withdrawals, the construction or upgrading of defensive positions, or the laying of false minefields.

---

6 Soviet doctrine during and since World War II has stressed that, whenever possible, water obstacles be forced from the march without interruption of the advance, at multiple points, along a broad front. Although the Soviets did successfully cross many broad rivers from the march during operations against the Germans, uninterrupted crossings were not always possible, due in part to inadequate engineering equipment. Since the war, the Soviets have devoted tremendous resources to improving the river crossing capabilities of their combat equipment and providing large stocks of specialized bridging and assault crossing equipment. (Refer to the following unclassified DIA study for details: *Soviet and Warsaw Pact River Crossing: Doctrine and Capabilities,* DDI-1150-13-77, May 1977.)

In one or more sectors where main effort offensives are not planned, a number of measures may be initiated to give the impression that preparations for an offensive are underway. These measures include: simulated troop reinforcement; increased radio broadcasts and the creation of false radio nets; clearing minefields and breaching wire entanglements; the registration of artillery fire; the delivery of dummy/decoy equipment from the rear and its use to create false concentration areas and vehicle columns; construction or simulated construction of new roads or the improvement of existing roads; the use of camouflaging and/or decoying smokescreens; the repair of damaged bridges or the construction or simulated construction of bridges and ferries; increased ground and aerial reconnaissance; use of roaming guns to simulate increased artillery assets; the broadcasting of engine and track noise; and the simulated delivery of ammunition, supplies, and equipment.

12. EFFECTIVENESS

Soviet doctrine emphasizes that success in combat is facilitated by commanders who attach the proper significance to the principles of camouflage and concealment and apply them in an imaginative manner. Commanders, however, are not equally enthusiastic or resourceful in applying doctrinal concepts; consequently, considerable variation may be noted in the proficiency and innovativeness displayed by individual units.

Motivation -- or lack thereof -- appears to be the key to how seriously commanders attempt to implement doctrinal guidelines. The Soviets have noted that it can be difficult -- especially in peacetime -- to convince commanders and troops that "alien eyes" may be recording their every move, and that camouflage and concealment techniques can be effectively applied in wartime only if practiced and perfected in peacetime.

The Soviets admit, for example, that their camouflage and concealment efforts during the early stages of World War II were woefully inadequate, despite provisions of the 1939 Field Service Regulations, which required commanders "to take all measures to camouflage units and their activities in all situations." These regulations dictated that commanders implement camouflage and concealment measures without waiting for specific instructions, so that they became second nature and even required air observation and aerial photography to detect shortcomings. In fact, however, the regulations were largely ignored. In June 1941 and again in September 1941, additional instructions relating to camouflage and concealment were sent to field commanders, even as German armies were pushing toward Moscow. Some positive improvements were noted, and by late 1941 camouflage and concealment measures were improved so much that they are officially credited with playing a major role in the successful defense of Moscow in December 1941. In short, the nature of camouflage and concealment is such that it may not be taken too seriously unless a discernible threat motivates actions to help assure survival.

Several recent articles in Soviet military journals indicate that senior officers are concerned about commanders who underestimate the value of camouflage and concealment. Unfavorable comparisons have been drawn between the contemporary practices of some commanders and the innovative measures which characterized operations during World War II. One journal article charged that some commanders have now reduced attention to camouflage and concealment and "merely make a stab" at it during field training exercises without being concerned with quality. The same article pointed out that "improper camouflage is worse than a total lack of it" and that some commanders mistakenly believe that the enemy can be easily deceived.

Another article criticized a battalion commander for neglecting camouflage procedures during a training exercise and lamented the fact that this particular transgression was *not* unique.

The criticism of inadequate attention by some commanders to camouflage and concealment measures should not be construed as an indication that Warsaw Pact units are incapable of effectively implementing such measures. In fact, Western observers have reported impressions of Pact camouflage and concealment efforts ranging from "excellent" to "poor" to "nonexistent." Rather, the criticism indicates that some commanders have displayed less initiative and ingenuity than others. Judging by the level from which criticism has been directed, it is probable that steps are being taken to correct noted deficiencies.

13. CONCLUSIONS

Warsaw Pact doctrinal emphasis on camouflage and concealment is substantial, and a variety of measures are practiced to deny information and mislead actual or potential adversaries. Regulations require that commanders initiate and closely supervise camouflage and concealment measures. Ground inspection, aerial observation, and photography are used to detect shortcomings.

Nevertheless, it appears that the effective *application* of doctrinal concepts has been uneven during peacetime field training. Deficiencies have been noted by senior Soviet officers, and admonishments have been issued for the purpose of achieving improvement. It cannot be assumed, however, that the rather casual attitude toward camouflage and concealment displayed by some commanders during peacetime training exercises would be evident during combat operations. The Soviets demonstrated in World War II the capability of conducting large-scale military operations concurrently with the employment of a multitude of deceptive practices including effective camouflage and concealment. In any future war or period of tension, the Warsaw Pact must be credited with the capability of implementing doctrinal guidelines which require effective camouflage and concealment measures.

DISTRIBUTION LIST

DOD AND JOINT AGENCIES

A009 OASD ATOM ENERGY
A010 AFS COL
A024 DEF NUCLEAR AGCY
A085 NAT DEF UNIVERSITY
A104 OASD (CCC&I)
A115 OASD ISA
A310 JCS/J-3 (SP OP DIV)
A340 JCS/J-5 MIL SEC
A353 JSTPS
A137 OASD ISA/MBFR-PP

DIA

B040 DIA/DIO
B055 DIA/DT-4B
B080 DIA/SWS
B134 DIA/DE-2
B159 DIA/DT-1A1
B363 DIA/DB-1B2 (2)
B364 DIA/DB-1B3 (2)
B501 DIA/RCI-1
B545 DIA/VP
B566 DIA/DB-1F2
B571 DIA/DB-4G1
B579 DIA/DN-2B2
B580 DIA/DB-1B6 (2)
B584 DIA/DB-1B4 (20)
B586 DIA/DB-4D1
B593 DIA/DB-1G2
B594 DIA/DB-1F (2)
B597 DIA/DB-1G1
B615 DIA/DN-2C
B722 DIA/DB-5B
B731 DIA/DB-5F
B737 DIA/RDS-3B3 (LIB) (5)
B825 DIA/DB-4C3
B362 DIA/DB-1B1 (2)
B547 DIA/VP-S (5)
B563 DIA/DB-1B5 (PENT) (2)
B859 USDAO BULGARIA
B886 USDAO HUNGARY
B917 USDAO POLAND
B919 USDAO ROMANIA
B871 USDAO CZECHOSLAVAKIA
B934 USDAO USSR
B939 USDAO YUGOSLAVIA

NAVY

D007 NISC HQ (CODE 27)
D008 NISC (2)
D033 STRATANALSUPPGRU
D150 CMC (INT)
D159 NAVAIRDEVCEN
D217 NAVWPNCEN
D218 NRL WASH DC
D246 NAVSURFWPNCEN DAHL
D248 NAVSEASYSCOM
D249 NAVPGSCOL
D506 NOSC (CODE 121A/B)
D507 COMINEWARCOM
D510 CHNAVMAT (MAT-09I)
D971 OP-009F
D972 OP-009BIP
D232 NISO SANFRAN

AIR FORCE

E010 AFIS/INDOC
E016 AFIS/INC
E017 AF/RDQA-W
E018 AF/RDQA-C
E046 7602 INTELG/INOA1
E053 AF/INAKA
E054 AF/INAKB
E100 TAC (9TH TIS/LDD)
E303 AF/INAP
E408 AFWL
E411 ASD/FTD/ETID
E429 SAMSO (IND)
E436 AFEWC (SUR)
E437 AFIS/INI
E451 AUL/LSE
E020 AFIS/INZA
E230 AF/SGHXO
E409 AMD

U&S COMMANDS

G005 CINCAD
H005 USCINCEUR
H006 USEUCOM DEFANALCTR
H010 SOTFE (J-3)
H101 USAFE 497RTG (IRC)
H300 USAICE (USAREUR)

Approved For Release 2005/03/24 : CIA-RDP83M00171R000300230001-9

DISTRIBUTION LIST (Con.)

J515 FICEURLANT
K005 CINCPAC
K007 COMUSJAPAN
K020 COMUSTDC
K115 5TH AF
K300 IPAC (CODE IC-L)
K304 USATSA-J (2)
K505 FICPAC
K515 COMSEVENTHFLT
K650 COMNAVSURFPAC
K658 COMUSNAVPHIL
K991 FITCPAC
K408 COMLATWINGPAC(42B2)
L005 CINCSAC
L040 SAC 544TH ARTW
N005 USREDCOM

OTHER

P055 CIA/CRS/ADD/SD (14)
P085 STATE (5)
P090 NSA (5)
S030 FRD LIB OF CONG

DIA DISTRIBUTION 175

ARMY DISTRIBUTION

Active Army, ARNG, USAR: To be distributed in accordance with DA Form 12-9A requirements for Military Intelligence-B (Qty rgr block No. 337). ---------- 11,000

MARINE CORPS DISTRIBUTION

Distribution Code: TBA ---------- 2,400

DISTRIBUTION SUMMARY:

DIA DISTRIBUTION	175
DIA STOCK	140
DIA TOTAL	315
ARMY DISTRIBUTION	11,000
MARINE CORPS DISTRIBUTION	2,400
TOTAL PRINT	13,715

* USGPO 734-104 1302/533

Approved For Release 2005/03/24 : CIA-RDP83M00171R000300230001-9